Section

1.01 AUTHORITY:

These Standards are promulgated by the Manager of Denver Water pursuant to the authority granted to him/her by the Charter of the City and County of Denver, as amended.

The administration of these Standards including interpretation, enforcement, revision, waiver and variance is hereby delegated by the Manager to the Director of Engineering or an appointed representative.

Any variance request must be submitted to the Water Sales Section and forwarded to the Director of Engineering or an appointed representative for review and approval.

1.02 EFFECTIVE DATE OF STANDARDS:

These Standards shall be effective after they have remained posted in a conspicuous public place in the principal business offices of Denver Water for a period of 15 days, and shall supersede all former Engineering Standards of the Board of Water Commissioners, Denver, Colorado.

1.03 REVISIONS, AMENDMENTS OR ADDITIONS:

These Standards may be revised, amended, or added to from time to time. Such revisions, amendments and additions shall be binding and of full force and effect when published in the manner set forth in 1.02, above.

1.04 DENVER WATER CONTROL:

These Standards shall apply to the installation, operation, and maintenance of all water facilities under the control of Denver Water. Such control shall be exercised in accordance with the Charter within Denver and by contract with Distributor Contract areas.

Notwithstanding any variance from these Standards that occurred or was authorized in the past, or that may be authorized in the future, Denver Water shall not be restricted or limited in the exercise of its lawful powers. No action in violation of these Standards, direct or indirect, of or by any person, including any owner, operator, or agent of an owner or operator of any water facility in making any connection, disconnection, repair, or otherwise doing work with respect to any water facility served with water from the Denver Water system, shall continue after discovery of such violation, or the enforcement of corrective action as to such violation.

1.05 ORGANIZATION AND INTERPRETATION OF STANDARDS:

These Standards are composed of written Engineering Standards, Materials Specifications, and Standard Drawings. The interpretation of any section, or of differences between sections, when appropriate, shall be made by the Director of Engineering or an appointed representative, and his/her interpretation shall be binding and controlling in its application.

Whenever there is a conflict between these Engineering Standards and any referenced standard, specification, or code the most stringent requirement shall apply.

1.06 DEFINITIONS:

As used in these Standards, unless the context shall otherwise require, the words defined in this paragraph shall have the meanings herein ascribed:

A. Applicant for System Extension: Any person, association, corporation, entity, or government agency desiring water service for premises under their control and having been granted a license by Denver Water to receive service; often a subdivider or developer. Also referred to as Applicant.

B. Auxiliary Water Supply: Any water supply on or available to a customer's premises other than Denver Water's approved public water supply.

C. Back-Pressure: Backflow caused by a pump, elevated tank, boiler, pressure in pipe, or any means that could create greater pressure within a piping system than that which exists within the potable water supply.

D. Backflow: The flow of water or other liquids, mixtures, gases, or substances into the distributing pipes of a potable water supply, from any source other than its intended source.

E. Backflow Preventer: A device or method designed to prevent backflow consisting of one of the following:

1. Air-Gap: The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device, and the flood level rim of said vessels. An approved air-gap will be at least double the diameter of the supply pipe, measured vertically, above the top of the overflow rim of the overflow rim of the vessel, and in no case less than one inch.

2. Pressure Vacuum Breaker: A type of device in which the check valve is designed to close with the aid of a spring when the line pressure drops and at the same time the air relief is designed to open when the internal pressure is just above atmospheric pressure so that no non-potable liquids may be siphoned back into the potable water system. Being spring loaded, it does not rely upon gravity as does the non-pressure type vacuum breaker. This type of device may not be installed where it might be subjected to any back-pressure condition.

3. Non-Pressure Vacuum Breaker: A type of device which is better known as an atmospheric vacuum breaker; and is always placed down stream from the shut-off valve, and, which will cause its vent to close when the water flows in the normal direction. But, as soon as the water ceases to flow, the air vent valve is caused to open, thus interrupting the possible back-siphonage effect. This device should be installed at least 6 inches above the highest outlet and should not be used where it is subject to line pressure for more than 24 hours.

4. Double Check Valve: An assembly of two internally loaded, specially designed and independently operating check valves together with a tightly closing shut-off valve on the upstream and downstream side of the check valves. This type of device is used on all direct or indirect water connections through which pollutants may enter the potable water system under backflow conditions.

5. Reduced Pressure Principle Device: An assembly of two internally loaded, specially designed, and independently operating check valves which also has a mechanically independent, hydraulically dependent relief valve between the check valves, specifically designed to maintain a zone of reduced pressure between the two check valves at all times. This assembly must also have tightly closing upstream and downstream shut-off valves. This assembly is used for the protection of the potable water supply wherever a direct or indirect connection is made to a point of use involving any substance, which might present a health hazard. The only exceptions are in the case of installations where sewage substances are handled under pressure (here no direct connection may be made which might be placed under a back-pressure condition); and, private water supplies (e.g., wells) that may be of lower quality than the public water supply.

F. Backflow Prevention: Prevention of the flow of any foreign liquids, gases, or substances into the distributing pipe lines of a potable supply of water.

G. Backflow Prevention Device: A device accepted and approved by Denver Water as meeting an applicable specification stated or cited in this chapter or as suitable for the proposed use and as approved and accepted by the Colorado Department of Health.

H. Back-Siphonage: A form of backflow due to a negative or sub-atmospheric pressure within a water system.

I. Board: The Board of Water Commissioners or an authorized representative as established by the Charter of the City and County of Denver.

J. Certified Welder: A skilled welder, welding operator or tacker who has had adequate experience in the method of materials to be used and is qualified under the provisions of the American Welding Society Standard (AWS) D1.1 using test position 6G.

Welders shall be qualified by an independent, local, approved testing agency not more than 6 months prior to commencing work. Machine and electrodes similar to those used in the work shall be used in qualification tests.

K. City and County of Denver: The territorial limits of the City and County of Denver, inside which Denver Water has complete control of the Distribution System, including ownership, construction, operation, and maintenance of all facilities, reading of meters, and billing of customers.

L. Conduit: A 24 inch or larger diameter pipe carrying non-potable or potable water from or to treatment facilities and storage reservoirs, and to delivery points feeding the Distribution System.

M. Consecutive System: A public water system that receives, through purchase or other means, treated water from a supply system and distributes that water, without additional treatment except disinfection, through a distribution system that it owns. A consecutive system may be included in an integrated system.

N. Consumer: Any person, firm, or corporation using or receiving water from the public water system.

O. Contamination: An impairment of the quality of the water by sewage or industrial fluids to a degree which creates a natural hazard to the public health through poisoning or through the spread of disease.

P. Contractor: In the context of these Standards, a Contractor employed by an Applicant for distribution system extension.

Q. Cross Connection Control:

1. Containment: Prevention of actual or potential cross connection in the plumbing system of a consumers premises from the public water supply system.

2. Isolation: Prevention of actual or potential cross connections within the consumers plumbing system.

R. Denver Water: The plant, facilities, system, assets, and personnel controlled by the Board pursuant to its Charter authority.

S. Distribution Main: See Water Main.

T. Distribution System: Mains of 12 inch and smaller diameter, together with all appurtenant and necessary valves, fire hydrants, taps, meters, service pipes, and associated materials, property, and equipment receiving potable water from Conduits and Transmission Mains distributing it to individual consumers.

U. Distributor: Any party to a contract with the Board for the delivery of non-potable or potable water outside the City and County of Denver.

V. Distributor Contract Area: An area which is covered by a contract that furnishes potable or non-potable water to an entity having authority to occupy public streets, roads, and ways as a water utility serving some area outside the City and County of Denver. These areas are classified as "Master Meter" (treated or untreated water), "Read and Bill" or "Total Service" Areas. Also see Master Meter Contract Area, Read and Bill Contract Area and Total Service Contract Area.

W. Engineer: The Director of Engineering (or an appointed representative), who is a member of the Manager's Executive Staff.

X. Industrial Piping System: Any system used by a consumer for the transmission or confinement, or storage of any fluid, solid, or gaseous substance other than an approved water supply, including all pipes, conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey or store substances which are or may be polluted or contaminated.

Y. Inspector: The authorized representative of the Engineer assigned to a jobsite.

Z. Integrated System: Two or more public water systems, one of which is a supply system, whose distribution systems are physically connected and are being operated using a common set of standards for the purposes of maintaining and protecting drinking water quality.

AA. Main Extensions: Extensions to the Distribution System that are within the City and County of Denver or Total Service Areas.

BB. Manager: The chief executive officer of Denver Water, designated as such by the Board.

CC. Master Meter Contract Area: An area, in which, by contract, the Distributor is responsible for construction, operation, and maintenance of the system to distribute water to the consumer and for reading the meters of the individual customers and for billing them accordingly.

DD. Non-Toxic Substance: Any substance of a non-poisonous nature that may create a minor or moderate hazard to the domestic water system.

EE. Pollution: An impairment of the quality of the water to a degree which does not create an actual hazard to the public health, but which does adversely and unreasonably affect such waters for domestic use.

FF. Private Pipe Extensions: Extensions to Distribution Systems that are within Distributor Contract Areas and outside the territorial boundaries of the City and County of Denver.

GG. Read and Bill Contract Area: An area, in which, by contract, the Distributor is responsible for the operation and maintenance of the system to distribute water to the individual customer. Denver Water reads the meter of each customer and bills according to a specified rate.

HH. Section and Division: The words Section and Division are used as organizational subdivisions of Denver Water (e.g. Water Sales Section, Engineering Division, etc.).

II. Service Line: All pipe, fittings, and appurtenances of the licensee for conveying water from Distribution Mains to the consumer.

JJ. Stub-in: A Tap made for the purpose of installing Service Lines prior to the paving of streets. Such connection shall include fittings necessary to extend the Service Line to the valve at the property line.

KK. Tap: Physical connection to a Distribution Main which, together with appropriate license, affects water service to individual consumers.

LL. Total Service Area: An area, in which, by contract, Denver Water is responsible for the operation and maintenance of the system to distribute water to the individual consumer and for reading the individual consumer's meters and for billing them accordingly.

MM. Toxic Substance: Any substance (liquid, solid, or gaseous) including raw sewage and lethal substances which, when introduced into the water supply system, creates or may create a danger to the health and well-being of the consumer.

NN. Transmission Main: A 16 inch or 20 inch diameter pipe receiving potable water from a Conduit and distributing it to individual consumers.

OO. Water Main or Distribution Main: A 12 inch or smaller diameter pipe along public streets or appropriate rights-of-way used for distributing water to individual consumers.

PP. Water-Potable: Water from any source which has been investigated by the health agency having jurisdiction, and which has been approved for human consumption.

QQ. Water-Nonpotable: Water such as treated domestic wastewater, groundwater and well water which is suitable for various beneficial uses excluding human consumption.

RR. Water Purveyor: The owner or operator of the public water system supplying an approved water supply to the public.

SS. Water Supply-Auxiliary: Any water source or system other than the public water supply that may be available in the customer's building or premise.

TT. Water Supply-Unapproved: A water supply, which has not been approved for human consumption by the official health authority having jurisdiction.

UU. Water System-Consumer: Any water system located on the consumer's premises whether supplied by a public potable water system or an auxiliary water supply.

VV. Water Service Connections: The terminal end of a service connection from Denver Water's water system; i.e., where Denver Water loses jurisdiction and quality control over the water at its point of delivery to the customer's water system. The service connection will mean the downstream end of the meter. There should be no unprotected takeoffs from the service line ahead of any meter or a backflow prevention device located at the point of delivery to the customer's water system. Service connection will also include water service connection from a fire hydrant, fireline, and any other temporary or emergency water service connection from Denver Water's potable water system.

WW. Welder: See Certified Welder.

1.07 ABBREVIATIONS:

All references to documents or specifications shall be the latest edition or revision thereof.

A. AASHTO: American Association of State Highway and Transportation Officials

B. AC: Asbestos Cement

C. AFBMA: Anti-Friction Bearing Manufacturers Association

D. ANSI: American National Standard Institute, Inc.

E. ASC: Automatic Sprinkler Connection

F. ASTM: American Society of Testing and Materials

G. AWS: American Welding Society

H. AWWA: American Water Works Association

I. CI: Cast Iron

J. DI: Ductile Iron

K. ERT: Encoder-receiver-transmitter

L. ESMT: Easement

M. FL: Flow Line

N. FLG: Flange

O. FMCT: Fireline Meter and Compound Torrent

P. HGL: Hydraulic Grade Line

Q. ID: Inside Diameter

R. IEEE: Institute of Electrical and Electronics Engineers

S. IP: Iron Pipe

T. ISA: Instrument Society of America

U. KVA: Kilo-Volt-Amperes

V. MEE: Machined Each End

W. MH: Manhole

X. MJ: Mechanical Joint

Y. MOA: Machined Over All

Z. MSS: Manufacturer's Standardization Society of Valve and Fittings

AA. NEC: National Electrical Code

BB.	NEMA:	National Electrical Manufacturers' Association
CC.	NFPA:	National Fire Protection Association
DD.	NPT:	National Pipe Thread
EE.	NSF:	National Sanitation Foundation
FF.	OD:	Outside Diameter
GG.	OSHA:	Occupational Safety and Health Administration
HH.	PL:	Property Line
II.	PRV:	Pressure Regulating Valve
JJ.	PSF:	Pounds per Square Foot
KK.	PSI:	Pounds per Square Inch
LL.	PUD/PBG:	Planned Unit Development/Planned Building Group
MM.	PVC:	Polyvinyl Chloride
NN.	SAE:	Society of Automotive Engineers
OO.	UBC:	Uniform Building Code
PP.	UMC:	Uniform Mechanical Code
QQ.	UPC:	Uniform Plumbing Code
RR.	WOG:	Water-Oil-Gas
SS.	WRA:	Water Reducing Agent
TT.	WSC:	Water Service Contractor
UU.	WSP:	Working Steam Pressure
VV.	WWF:	Welded Wire Fabric